



## **SECTION THREE MITIGATION STRATEGIES**

**STATE OF UTAH  
HAZARD MITIGATION PLAN**

**NOVEMBER 2010**

## ***Mitigation Strategy Concept***

**Requirement §201.4(c)(3)(i):** *[The State mitigation strategy shall include a] description of State goals to guide the selection of activities to mitigate and reduce potential losses.*

**Requirement §201.4(d):** *Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities...*

Hazard identification presented in this document along with the risk analysis within each chapter, together identify the likelihood of a natural hazard having severe enough consequences to warrant mitigation. The USHMPC has developed goals, objectives, and action items specific to each hazard, when united they provide a strategy to lessen the vulnerability of each specified hazard. Strategies developed for each hazard are not all inclusive and the state reserves the right to modify strategies as it sees fit to address mitigation needs as they arise. Future occurrences, new technology, or an unforeseen event could result in a modification to strategies outlined in this plan.

Even though a potential project may not be listed in this plan as a specific mitigation action, the State will still aid in completing the project, as if it were a project listed in this state mitigation plan. State support will be applied to any mitigation action deemed cost effective and environmentally sound, which can be classified under any of the six FEMA approved mitigation categories:

### Prevention

Stops the problem before it starts as well as keeping the problem from starting or becoming worse. The use of known hazards areas, like floodplains for example, can be limited through planning ordinances, land acquisition, or regulation.

### Property Protection

Measures are those actions that go directly to permanently moving people, property, and businesses out of unsafe areas where, in terms of wise disaster and community planning they shouldn't have been in the first place.

### Natural Resource Protection

Projects pertaining to natural resource protection preserve or restore natural areas or their natural functions.

### Emergency Services

Measures are taken during a disaster to minimize its impacts. These measures are the responsibility of city and county emergency managers, operators of major and critical facilities, and local emergency service organizations.

### Structural Projects

Structural projects are usually designed by engineers to reduce or redirect the impact of natural disasters away from at-risk population areas.

### Non Structural Projects

Projects that are designed to reduce or redirect the impact of natural disasters that do not require structural work.

#### Public Information

Public information educates and advises property owners, potential property owners, and others of hazards and ways to protect people and property from them.

Additional information and suggested projects under these classifications can be found in the State of Utah Mitigation Menu in Appendix B

In this plan the following definitions apply, with regards to the layout of state mitigation strategies:

Mitigation Strategies: A method by which an aspect of a specific hazard could be mitigated. A strategy consists of at least one goal per hazard, at least one objective per goal, and at least one-action items per objective. A strategy is not complete without all three.

Goal: A statement of an ideal condition that addresses a specific aspect of a hazard to reduce the severity of its impact.

Objective: A statement of a step that could reasonably be taken toward achieving the goal. Objectives may be difficult to reach, but are attainable within the planning timeframe.

Potential Projects: A specific activity that could be undertaken to provide one step toward an objective to accomplish the goal.

Per DMA 2000 requirements, State Hazard Mitigation, plans must address critical facilities, especially those owned by the State. Specific mitigation strategies exist through out this plan for state owned facilities; this is particularly true for those critical facilities found to lie within high hazard boundaries.

The state always looks for the greatest benefit for the greater good when evaluating mitigation actions to include planning and projects. The state PDM review process reflects this “greatest benefit, greater good” concept. This updated plan will continue to foster and support sound mitigation actions in the state.

The state’s successful PDM program 2003 – 2010 has supported mitigation goals identified in the current plan. PDM wildfire mitigation grants has contributed to Wildfire Mitigation Strategies, Priority Goal #1, Eliminate dangerous fuel loading in wildlands. PDM earthquake seismic projects have contributed to Earthquake Mitigation Strategies, Priority Goal #1; reduce the effects of earthquakes on critical facilities. The PDM state and local mitigation planning grants, Priority Goal #1, increase awareness of hazard mitigation, and Priority Goal #2, improve overall integrated statewide mitigation efforts.

The PDM process begins when the DHLS sends out a Notice of Interest (NOI) to all communities within the state. The NOI has to be returned to the state for review to see if the potential project is eligible and beneficial to continue working on for a PDM project. The state then helps the applicant with the PDM grant application, making sure that the project is

environmentally sound, passes the benefit cost analysis and follows the laws and procedures. After receiving all finished PDM grants the state mitigation section reviews the grants and identifies the priorities, this is done by comparing what the PDM project proposes to do to the mitigation objectives and goals set forth in the plan.

Strategies reflect what Utah would like to mitigate. These strategies do not take into account the biggest limiting factor in successfully completing mitigation, funding! Thus, implementation of the mitigation strategies listed in this plan or any of the locally adopted hazard mitigation plans is contingent upon the sponsor receiving financial support.

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Two of the seven local mitigation plans have been updated when this plan was updated. We were able to update the local mitigation strategies for only the jurisdictions covered by those two local mitigation plans. The other five local mitigation plans are in the process of being updated. This is the predicament with updating the SHMP every three years, the local plans do not change as quickly.

Part of the states technical assistance efforts will be directed in assisting communities to identify cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies can be found in the local mitigation strategies section of this mitigation plan. Interdisciplinary multi-jurisdictional working groups, coordinated at the county level, generated these mitigation strategies, which were incorporation into the regional Pre-Disaster Mitigation plans completed by the seven Associations of Government.

Section Five of this mitigation plan contains a comprehensive table of locally generated mitigation projects. The projects in the matrix are from the seven regional mitigation plans and represent a statewide list of mitigation projects.

The Emergency Management Accreditation Program (EMAP) is a standard-based voluntary assessment and accreditation process for state and local government programs responsible for coordinating prevention, mitigation, preparedness, response, and recovery activities for natural and human-caused disasters. Accreditation is based on compliance with collaboratively developed national standards. Utah is one of few states that are EMAP accredited. The inclusion of EMAP Accreditation document in the appendix is to tie planning efforts together, which is a requirement for this plan and EMAP. It is also in support of the state's enhanced planning efforts.

## **Goals**

### **Short Term Goals**

These goals form the basis for the development of the hazard mitigation plan and are shown from highest priority, at the top of the list, to those of lesser importance nearer the bottom.

- Protection of life before, during, and after the occurrence of a disaster.
- Preventing loss of life and reducing the impact of damage where problems cannot be eliminated.

- Protection of emergency response capabilities (critical infrastructure)
- Communication and warning systems
- Emergency medical services and medical facilities
- Mobile resources
- Critical facilities
- Government continuity
- Economic continuity
- Protection of developed property, homes and businesses, industry, education opportunities and the cultural fabric of a community, by combining hazard loss reduction with the community's environmental, social and economic needs.
- Protection of natural resources and the environment, when considering mitigation measures.
- Promoting public awareness through education of community hazards and mitigation measures.
- Preserving and/or restoring natural features that provide mitigation such as floodplains.

### **Long Term Goals**

- Eliminate or reduce the long-term risk to human life and property from identified natural and technologic hazards.
- Aid both the private and public sectors in understanding the risks they may be exposed to and finding mitigation strategies to reduce those risks.
- Avoid risk of exposure to identified hazards.
- Minimize the impacts of those risks when they can not be avoided
- Mitigate the impacts of damage as a result of identified hazards.
- Accomplish mitigation strategies in such away that negative environmental impacts are minimized.
- Provide a basis for funding of projects outlined as hazard mitigation strategies.
- Establish a regional platform to enable the community to take advantage of shared goals, resources, and the availability of outside resources. If an earthquake occurs outside of the county seat it will still affect the county seat. This is similar to many natural hazards.
- Establish a framework and database for the county seat to use to apply for aid.
- Establish a state-funding source for state and local funding of mitigation projects.

## State Plan Mitigation Strategies

**Requirement §201.4(c)(3)(iii):** [State plans **shall** include an] identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section **should** be linked to local plans, where specific local actions and projects are identified.

**Requirement §201.4(d):** Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities...

### Dam Safety ✓

The Division of Water Rights Dam Safety Section is in charge of maintaining dam safety within the state of Utah. Dam Safety is inherently, by nature and definition, centered on mitigation. Thus the single most important dam safety mitigation strategy would be continued funding at an elevated level. Elevated funding would allow the state to bring more dams up to current standards in a shorter amount of time. The States goal is no dam failures- old or new - small or large - high, moderate or low hazard. It should not take a dam failure to keep funding and focus.

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies pertaining to dam safety can be found in the local mitigation strategies section of this mitigation plan. Interdisciplinary multi-jurisdictional working groups, coordinated at the county level, generated these mitigation strategies, which were incorporation into the regional Pre-Disaster Mitigation plans completed by the seven Associations of Government.

### **#1 Priority Goal: Eliminate unsafe dams in the State of Utah.**

#### A. Objective: Bring deficient High Hazard dams up to current industry standards

##### Possible projects:

1. Complete the Dam Safety projects prioritized in the Dam Rehabilitation Priority Listing done by Dam Safety Section. The priority listing is available in Appendix J.
2. Continue funding from Utah legislature, 4 million per year, and push for funding from the feds through the National Dam Safety Rehabilitation Act - 300 million dollars.
3. Continue the program to take care of prioritized moderate hazard dams that can cause significant property damage on a benefit cost basis.

##### Responsible agencies:

DHS,

FEMA ,  
NRCS  
ACOE  
HLS  
BOR.....  
Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts whom own dams.

Possible funding:

State Dam Safety, State Budget

**#2 Priority Goal: Maintain all dams in Utah**

- A. *Objective: Maintain a dam safety program that will keep up with industry standards with support from the legislature, department, division, and governor*

Possible Projects:

1. Regular dam inspection
2. Install a monitoring system
3. Develop owner education and coordination
4. Have consistent EAP updates and practices

Responsible agencies:

DHS,  
FEMA ,  
NRCS  
ACOE  
HLS  
BOR.....  
Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts whom own dams

Possible funding:

State Dam Safety, State Budget

- B. *Objective: Update dam Emergency Action Plans EAP.*

Possible projects:

1. Updated all dated EAP plans off of a prioritized risk table.
2. Create dam failure notification and call down lists in event of disaster.
3. Digitized dam failure inundation maps for use in Geographic Information Systems.
4. Provide inundation maps on the web.

Responsible agencies:

DHS,  
FEMA ,  
NRCS

ACOE  
HLS  
BOR.....  
Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts whom own dams

Possible funding:

State Dam Safety, State Budget

C. Objective: *Study dam failure vulnerability.*

Possible projects:

1. Utilized digitized dam failure inundation map to calculate location vulnerability.
2. Estimate losses for inundated areas to validate dam upgrades.

Responsible agencies:

DHS,  
FEMA ,  
NRCS  
ACOE  
HLS  
BOR.....  
Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts whom own dams.

Possible funding:

State Dam Safety, State Budget

**#3 Priority Goal: Reduce the vulnerability to State-owned and critical facilities and populations located within the dam inundation zones**

A. Objective: *Update dam Emergency Action Plans EAP.*

Possible projects:

1. Exercise dam EAP
2. Technical assistance on updating and exercising dam safety plans could be provided to insure that dam safety plans are kept up to date and consistently exercised.

Responsible agencies:

DHS,  
FEMA ,  
NRCS  
ACOE  
HLS  
BOR.....



Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts whom own dams

Possible funding:

HMGP, PDM, State Dam Safety, State Budget

B. Objective: *Improve security for the State's high hazard dams*

Possible projects:

Responsible agencies:

DHS,  
FEMA ,  
NRCS  
ACOE  
HLS  
BOR.....  
Division of Water Resources  
Dam Safety,  
Association of State Dam Safety Officials  
Private individuals, businesses, and water districts who own dams

Possible funding:

HMGP, PDM, State Dam Safety, State Budget

## **Drought Mitigation Strategies ✓**

The impacts of drought can be partially mitigated through cooperative partnerships between state and federal agencies, Tribes, public land users, and the Governor's Office. The unique composition of land ownership in Utah means drought mitigation must be completed through multi-agency efforts utilizing multi-disciplinary teams. Mitigation strategies listed below support the statewide drought mitigation plan, Utah Partners for Conservation and Development Drought Assessment and Mitigation State of the State Report (Appendix H), Land Use Plans from land management agencies, the State Drought Plan (Appendix G) and *Drought in Utah: Learning from the Past – Preparing for the Future* (Appendix G). The bottom line is, it takes teamwork, science, and above all time, patience, and communication to mitigate the economic, social, and environmental impacts of drought.

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures which yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies can be found in the local mitigation strategies section of this plan. Interdisciplinary multi-jurisdictional working groups, coordinated at the county level, generated these mitigation

strategies, which were incorporation into the regional Pre-Disaster Mitigation plans completed by the seven Associations of Government.

**#1 Priority Goal: To conserve existing water resources in all sectors.**

- A. Objective: *To educate the public about water conservation at home and in the workplace.*  
Possible projects:  
1. Provide related printed and broadcast material.  
2. Provide teacher education on this subject for classroom use.  
3. Provide speakers for civic groups and schools.  
Responsible agencies:  
State government for technical assistance and program development.  
Local government for program development and delivery.  
Possible funding:  
Local government operating budget.
- B. Objective: To adopt strict water conservation practices in all state buildings.  
Possible projects:  
1. Retrofit buildings with water saving devices.  
2. Educate employees about water conservation in the workplace.  
3. Develop and install water conserving landscaping.  
  
Responsible agencies:  
State government  
Possible funding:  
State government operating budget.
- C. Objective: *To conserve water within the agricultural sector.*  
Possible projects:  
1. Develop and demonstrate water conservation practices for agricultural use.  
2. Promote the use of treated wastewater effluent where appropriate.  
Responsible agencies:  
State government for technical assistance.  
Local government for program development and delivery.  
Possible funding:  
Local government operating budget.
- D. Objective: *To promote and support implementation of mitigation strategies identified in “Drought in Utah – Learning from the Past – Preparing for the Future”.*  
Possible projects:  
Incorporate strategies in natural hazard outreach programs

Possible funding:

State government operating budget.

**#2 Priority Goal: To reduce the impact of development on water resources.**

- A. Objective: *To enhance building codes for new construction in areas where potable water supply is a problem.*

Possible projects:

1. Modify existing building codes or adopt new ones where appropriate.
2. Require water-conserving landscaping.
3. Require the use of water-conserving appliances and fixtures in new construction.

Responsible agencies:

State government for technical assistance.

Local government for program development and delivery.

Possible funding:

Local government operating budget.

- B. Objective: *To develop demonstration projects to show the public how they can retrofit their property with appropriate water conservation technology.*

Possible projects:

1. Develop demonstration projects to show how to utilize water conservation technology including, but not limited to, gray water use and rainwater capture.

Responsible agencies:

State government for technical assistance.

Public water systems for program development and delivery.

Possible funding:

Public water system operating budget.

- C. Objective: *To require that all public water systems have drought contingency plans.*

Possible projects:

1. Provide technical assistance for drought contingency planning.

Responsible agencies:

State government for technical assistance.

Local government for program development and delivery.

Possible funding:

Local government operating budget.

- D. Objective: *To promote and support implementation of mitigation strategies identified in “Drought in Utah – Learning from the Past – Preparing for the Future”.*  
Possible projects:  
1. Incorporate strategies in natural hazard outreach programs  
Possible funding:  
State government operating budget.

**#3 Priority Goal: To improve public water infrastructure.**

- A. Objective: *To reduce water loss within public water infrastructure.*  
Possible projects:  
1. Identify and correct leakage from water mains.  
Responsible agencies:  
State government for technical assistance.  
Local government for program development and delivery.  
Possible funding:  
Local government operating budget.
- B. Objective: *To reduce water use by consumers.*  
Possible projects:  
1. Meter all water usage within water systems.  
2. Set water rates that encourage water conservation and cover the cost of operations and maintenance.  
Responsible agencies:  
State government for technical assistance.  
Local government for program development and delivery.  
Possible funding:  
Local government operating budget.
- C. Objective: *To increase efficiency through shared system management.*  
Possible projects:  
1. Develop incentives for public water systems to conserve their resources through merger or sharing.  
Responsible agencies:  
State government for technical assistance.  
Public water systems for mutual cooperation.  
Possible funding:  
Public water system operating budget.
- D. Objective: *To expand and improve existing potable water systems.*  
Possible projects:  
1. Enhance the productivity and efficiency of existing raw water extraction methods.

2. Develop new well fields or surface water sources for public drinking water.

Responsible agencies:

State government for technical assistance.

Public water systems for program development and delivery.

Possible funding:

Public water system operating budget.

- E Objective: *Support the State's Drought Mitigation Plans and initiatives.*

Possible projects:

1. Support the State Department of Natural Resources Water Resources Section in developing and updating the state drought plan.

Responsible agencies:

State Water Resources

Public water systems users

National Weather Service.

Possible funding:

Operating budgets of involved Agencies.

- F. Objective: *To promote and support implementation of mitigation strategies identified in "Drought in Utah – Learning from the Past – Preparing for the Future".*

Possible projects:

1. Incorporate strategies in natural hazard outreach programs

Possible funding:

State government operating budget.

## Earthquake Mitigation Strategies ✓

In addition to the mitigation strategies detailed below, the State Hazard Mitigation Plan also incorporates any seismic mitigation-indorsed by the Utah Seismic Safety Commission, and fully incorporates “A Strategic Plan for Earthquake Safety In Utah” completed in January 1995 by the Utah Seismic Safety Commission. A Strategic Plan of Earthquake Safety in Utah is located in Appendix C along with Earthquake Safety in Utah, A Progress Report on the Activities and Accomplishments of the Utah Seismic Safety Commission, December 2000.

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the state’s technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies for earthquakes is found in the local mitigation strategies section of this mitigation plan. Interdisciplinary multi-jurisdictional working groups, coordinated at the county level, generated these mitigation strategies, which were incorporated into the regional Pre-Disaster Mitigation plans completed by the seven Associations of Governments.

### **#1 Priority Goal: To reduce the effects of earthquakes on critical facilities.**

- A. Objective: *To prepare digital maps that locate critical facilities in earthquake zones.*  
Possible Projects:
1. Support seismic mitigation of state-owned critical facilities.
  2. Develop maps showing critical facilities overlaid on the earthquake hazard.
- Responsible agencies:  
State government for state-owned facilities.  
Local government for other facilities.
- Possible funding:  
State and local government operating budgets.
- B. Objective: *To retrofit critical facilities to withstand earthquakes.*  
Possible projects:
1. Reinforce the most hazard-prone parts of critical facilities.
  2. Salt Lake Leonardo Center
- Responsible agencies:  
Owners of those facilities.
- Possible funding:  
HMGP, PDM for public facilities.

### **#2 Priority Goal: To reduce the effects of earthquakes on businesses, residential structures, and public buildings.**

- A. Objective: *To retrofit businesses, residential structures, and public buildings to withstand moderate earthquakes.*  
Possible projects:

1. Reinforce the most hazard-prone parts of businesses, residences, and public buildings.
2. Promote incentive programs through state and local jurisdiction support to assist businesses and private residences in retrofitting URM buildings.
3. Survey all state schools using the ATC-21 process to identify hazardous schools

Responsible agencies:

Owners of those buildings.  
 Structural Engineers Association of Utah  
 Utah Seismic Safety Commission  
 Utah Office of Education

Possible funding:

HMGP, PDM for public buildings

**#3 Priority Goal: To include seismic standards in building codes where appropriate.**

- A. Objective: *Better enforcement of the seismic standards in the International Building Code IBC, which have been adopted statewide.*

Possible projects:

1. Training of building inspectors to the seismic provision in IBC

Responsible agencies:

State government for technical assistance.  
 Local government for code enhancement and enforcement.

Possible funding:

Local government operating budget.

**#4 Priority Goal: To educate the public about earthquake safety, earthquake mitigation actions at home and in the workplace, etc.**

- A. Objective: *To develop and disseminate earthquake safety programs for the public.*

Possible projects:

1. Provide printed and broadcast material.
2. Community Emergency Response Teams CERT
2. Provide teacher education and presentations for schools and civic groups.

Responsible agencies:

State government for technical assistance.  
 Local government for program development and delivery.

Possible funding:

HMGP, PDM  
 Local government operating budget.

## Flood Mitigation Strategies ✓

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies completed, as part of the seven AOG plans is located in the mitigation strategy section of this mitigation plan. Interdisciplinary multi-jurisdictional working groups, coordinated at the county level, generated these mitigation strategies, which were incorporation into the regional Pre-Disaster Mitigation plans completed by the seven Associations of Government.

### **#1 Priority Goal: To obtain benefits of NFIP for all property owners.**

- A. Objective: *To update and digitize all Flood Insurance Rate Maps (FIRMs).*  
Possible projects:  
1. Initiate planning process for the Map Modernization Program.  
2. Commence map modernization on a prioritized basis.  
Responsible agencies:  
State government, Division of Homeland Security  
Possible funding:  
FEMA grant under Floodplain Map Modernization
- B. Objective: *To have all jurisdictions participate in NFIP.*  
Possible projects:  
1. Enact legislation requiring all eligible jurisdictions to participate in NFIP.  
2. Promote the benefits of NFIP participation to all jurisdictions.  
Responsible agencies:  
State government for NFIP guidance  
Local government for NFIP ordinance and enforcement  
Possible funding:  
Local government operating budget
- C. Objective: *To lower policy holders' insurance rates through participation in the Community Rating System (CRS).*  
Possible projects:  
1. Eligible communities participate in CRS.  
Responsible agencies:  
State government for guidance and periodic CRS evaluation.  
Local government for CRS program compliance.  
Possible funding:  
Local government operating budget
- D. Objective: *To identify for the purposes of vulnerability insurable and non-insurable structures in the flood hazard area.*  
Possible projects:



1. Locate all such structures through use of GIS digital floodplain maps.

Responsible agencies:

Local government

Possible funding:

Local government operating budget

- E. Objective: *To regulate the alteration of existing drainage patterns by new development.*

Possible projects:

1. Adopt codes and ordinances that set reasonable limits on the alteration of drainage patterns due to new development.
2. Provide technical assistance for the development or modification of codes and ordinances related to this mitigation objective.

Responsible agencies:

State government to provide technical assistance.

Local government to enact and enforce codes and ordinances.

Possible funding:

Local government operating budget

## **#2 Priority Goal: To mitigate flood loss by structural projects.**

- A. Objective: *To survey all roads, bridges, and drainage structures determine their ability to withstand and pass the highest anticipated flood.*

Possible projects:

1. Identify and map all inadequate structures.
2. Propose solutions to any problems disclosed in the survey.

Responsible agencies:

State government for state-owned property.

State government for technical assistance to local governments.

Local government for property within their jurisdiction.

Possible funding:

State agency operating budgets.

Local government operating budgets.

- B. Objective: *To provide maintenance, repairs, and improvements to roads, bridges, and drainage structures.*

Possible projects:

1. Remove debris and vegetation from floodways and drainage structures through a systematic maintenance program.
2. Improve flood resistance through enhancement of wing walls, flood barriers, foundations, etc., at likely flood impact points.
3. Construct debris basins, flood retention ponds, energy dissipaters, etc., to control the flow and release of flood waters.

Responsible agencies:

State government for state-owned property.

Local government for property within their jurisdiction.

Possible funding:

State and local operating budgets for maintenance and repair.  
HMGP, PDM for structural projects.

**#3 Priority Goal: To assure that all people have basic information relating to flood issues.**

- A. Objective: *To provide flood-related information through print and broadcast media.*

Possible projects:

1. Prepare and disseminate brochures, public service spots, etc., related to flood mitigation and flood safety issues.

Responsible agencies:

State government for technical assistance.  
Local government for program development and execution.

Possible funding:

HMGP, PDM, FMA

- B. Objective: *To provide information and programs to schools.*

Possible projects:

1. To prepare and deliver flood related programs and materials for schools.

Responsible agencies:

State government for technical assistance.  
Local government for program development and execution.

Possible funding:

HMGP, PDM, FMA

**#4 Priority Goal: To mitigate flooding as a result of wildfires.**

- A. Objective: *To re-vegetate and rehabilitate areas burned by wildfire.*

Possible projects:

1. Identify areas where re-vegetation and rehabilitation is necessary, and prioritize.
2. Commence re-vegetation and rehabilitation on a priority basis.

Responsible agencies:

Federal and state government for areas within their jurisdiction.  
Federal and state government for technical assistance.  
Local government for areas within their jurisdiction.

Possible funding:

Federal programs via USFS, BLM, NRCS, or others.  
HMGP and PDM unlikely due to immediate need.

- B. Objective: *To construct temporary debris traps and other flood mitigating structures in wildfire-burned areas.*

Possible projects:

1. Identify areas where such construction is necessary, and prioritize.

2. Commence construction on a priority basis.

Responsible agencies:

Federal and state government for areas within their jurisdiction.  
Federal and state government for technical assistance.  
Local government for areas within their jurisdiction.

Possible funding:

Federal programs via USFS, BLM, NRCS, or others.  
HMGP and PDM unlikely due to immediate need.

**#5 Priority Goal: To provide support for all feasible flood related mitigation developed or proposed by a local jurisdiction.**

- A. Objective: *To support locally generated flood mitigation.*

Possible projects:

3. To numerous to list see local mitigation section of this plan for details on mitigation proposed by the local jurisdictions.

Responsible agencies:

Federal and state government for areas within their jurisdiction.  
Federal and state government for technical assistance.  
Local government for areas within their jurisdiction.

Possible funding:

Federal programs via USFS, BLM, NRCS, or others.  
HMGP and PDM.

## Landslide Mitigation Strategies ✓

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies developed as part of the county mitigation working groups were used in the multi-jurisdictional plans and can be found in the local mitigation strategies in this plan.

### **#1 Priority Goal: To reduce the impacts of landslides on critical facilities**

A. Objective:

Possible Projects:

1. Prepare digital maps that locate critical facilities in relation to potential landslide threats
2. Support seismic mitigation of state own critical facilities.
3. Develop maps showing critical facilities located in the landslide hazard area.
4. Set state standards on where critical facilities can be located
5. Develop a plan to relocate or protect facilities located within landslide hazard areas

Responsible agencies:

State government  
Local government

Possible funding:

State and local government operating budgets.

### **#2 Priority Goal: Increase the level of knowledge related to landslides**

B. Objective: *Educate general public on landslide risk.*

Possible projects:

1. Utah Geologic Survey website
2. Division of Homeland Security website
3. Training manuals
4. Educational publications
5. Utilize the information booth at the Utah State Fair and information posted on the HLS website
6. Promote and support Governor's Geologic Hazard Working Group.

Responsible agencies:

Utah Geologic Survey  
Division of Homeland Security

Possible funding:

HMGP, PDM for public facilities.

C. Objective: *Provide educational and training opportunities for city and county planners*

Possible projects:

1. Conduct half day landslide awareness training
2. Develop county landslide susceptibility maps for use in city and county planning

Responsible agencies:

United States Geologic Survey  
Utah Geologic Survey  
Division of Homeland Security

Possible funding:

HMGP, PDM for public facilities.

D. Objective: *Educate developers*

Possible projects:

1. Provide training to developers on landslide, there risks, and potential mitigation and legal liability.
2. Provide and encourage interaction with the Governor's Geologic Hazard Working Group

Responsible agencies:

Utah Geologic Survey  
Division of Homeland Security

Possible funding:

HMGP, PDM for public facilities.

**#3 Priority Goal: Monitor landslide movement**

E. Objective: *Continue to monitor landslide movement and respond to landslide activity.*

Possible projects:

3. Continued monitoring of landslide movement by the Utah Geologic Survey.
4. Continued field response to debris flows, landslides, and rock falls by the Utah Geologic Survey

Responsible agencies:

Utah Geologic Survey

Possible funding:

Utah Geologic Survey operating budget.

**#4 Priority Goal: Encourage Cities, Towns, and Counties to develop ordinances for geologic hazards.**

F. Objective: *Enable counties to develop ordinances*

Possible projects:

5. Develop updated landslide susceptibility maps starting with those areas most prone to landslides.

6. Continue to fund geotechnical report reviews. Currently upon request the Utah Geologic Survey will review geologic reports submitted by cities and counties.
7. Develop model ordinances and assist city and counties in development of geologic hazard ordinances.

Responsible agencies:

Utah Geologic Survey  
Department of Natural Resources  
Division of Homeland Security

Possible funding:

Utah Geologic Survey operating budget, HMGP, PDM, city and county.

## Severe Weather Mitigation Strategies ✓

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies developed as part of the county mitigation working groups were used in the multi-jurisdictional plans and can be found in the local mitigation strategies in this plan.

### **#1 Priority Goal: To assure that all people have basic information relating to severe weather issues.**

- A. Objective: *To provide weather-related information through print and broadcast media.*

Possible projects:

1. Prepare and disseminate brochures, public service spots, etc., related to severe weather, including, but not limited to, thunderstorms, tornados, lightning, hail, heavy snow fall, ice storms, extreme cold, and extreme heat.
2. Utilize Lightning Safety Awareness Weeks, Flood Safety Awareness Week, and Winter Safety Preparedness Week to provide weather-related information

Responsible agencies:

National Weather Service  
American Red Cross  
State government  
Local government

Possible funding:

HMGP, PDM

- B. Objective: *To provide severe weather information and programs to schools.*

Possible projects:

2. Prepare and deliver severe weather-related programs and materials for schools.

Responsible agencies:

National Weather Service  
American Red Cross  
State government  
Local government

Possible funding:

HMGP, PDM

### **#2 Priority Goal: To provide or enhance severe weather warning systems.**

- A. Objective: *To be able to warn people in tornado-prone areas through appropriate technology.*  
Possible projects:  
1. Increase participation the National Weather Service StormReady program.  
2. Increase NOAA Weather Radio All Hazards availability  
Responsible agencies:  
National Weather Service  
State government  
Local government  
Possible funding:  
HMGP, PDM
- B. Objective: *To be able to warn people of hazardous weather via broadcast media.*  
Possible projects:  
1. Enhance the Emergency Alert System (TV and radio) statewide.  
2. Enhance NOAA Weather Radio All Hazards coverage statewide.  
Responsible agencies:  
State government.  
Possible funding:  
HMGP, PDM

### **#3 Priority Goal: Enhance avalanche knowledge and warning ability**

- A. Objective: *To be able to warn people in potentially avalanche prone areas through appropriate technology.*  
Possible projects:  
1. Continued support and funding of the Utah Avalanche Forecast Center UAFC. The UAFC has numerous warning systems in place with an avalanche warning posted on the web and through their hotline each morning.  
Responsible agencies:  
National Weather Service  
U.S. Forest Service  
State government for technical assistance and grant funding.  
Local government for program development and execution.  
Possible funding:  
HMGP, PDM
- B. Objective: *Increase the avalanche skill base among the various users groups*  
Possible projects:  
2. Continued support and funding of the Utah Avalanche Forecast Center  
3. Low or no cost avalanche education similar to the avalanche education offered by the Utah Avalanche Forecast Center or avalanche expert.  
4. Tie in with ski resorts to assist in offering avalanche training.  
5. Conduct training specific to snowmobilers.



6. Increase avalanche knowledge of city and county emergency managers.

Responsible agencies:

National Weather Service  
U.S. Forest Service  
State government for technical assistance and grant funding.  
Local government for program development and execution.

Possible funding:

HMGP, PDM

**#3 Priority Goal: To design public buildings and private property to withstand the effects of severe weather.**

A. Objective: *To require that all new construction of any type meet enhanced standards for wind-loading, snow-loading, and other weather-related hazards.*

Possible projects:

1. Develop codes and ordinances that require safe rooms in new construction.

Responsible agencies:

State government for technical assistance.  
Local government for code development and enforcement.

Possible funding:

Local government operating budget.

C. Objective: *To retrofit existing structures to meet extreme weather standards.*

Possible projects:

1. Ensure retrofits comply with new building codes.

Responsible agencies:

State government for technical assistance.  
Local government for program development and execution.

Possible funding:

HMGP, PDM, local government operating budget.

D. Objective: *To identify and equip public buildings to serve as shelters for travelers stranded because of severe winter storms.*

Possible projects:

1. Identify suitable public buildings and equip them with supplies and emergency power generation capability.

Responsible agencies:

American Red Cross for guidance on shelter requirements.  
State government for technical assistance.  
Local government for program development and execution.

Possible funding:

HMGP, PDM, local government operating budget.

## Wildfire Mitigation Strategies ✓

The majority of mitigation projects in Utah are locally determined and prioritized based on community priorities. Part of the states technical assistance efforts have been directed to assisting communities in identifying cost effective mitigation measures that will yield benefits toward reducing their risk to hazards. A complete list of locally generated mitigation strategies relating to wildfire is available in the local mitigation strategies section of this mitigation.

### **#1 Priority Goal: To eliminate dangerous fuel loading in wildlands.**

- A. Objective: *To reduce fuel loads in and around critical facilities, regardless of ownership.*

Possible projects:

1. Reduce fuels in the vicinity of power stations, power lines, and transformer sites.
2. Reduce fuels along major transportation routes, prioritized by vulnerability and usage.
3. Reduce fuels in critical watersheds.
4. Reduce fuels around other critical facilities.

Responsible agencies:

State government  
Federal government  
Local government  
HLS  
EMNRD  
Private individuals and companies for their own property

Possible funding:

HMGP, PDM, SFA-WUI, FLEP

- B. Objective: *To reduce fuels on private property.*

Possible projects:

1. Provide assistance with disposition of vegetative material removed from private land, as through chipping or burning.
2. Develop programs for re-use of vegetative material that would contribute to the local economy.

Responsible agencies:

State and local government for providing assistance.

HLS  
EMNRD  
USFS

Private individuals and businesses for their own property

Possible funding:

HMGP, PDM, SFA-WUI, FLEP, RCA-EAP, CFRP

- C. Objective: *To reduce fuels on public lands.*

Possible projects:

1. Provide assistance with disposition of vegetative material removed from public land, as through chipping or burning.
2. Develop programs for re-use of vegetative material that would contribute to the local economy.

Responsible agencies:

Federal, state and local government  
HLS  
EMNRD  
USFS

Possible funding:

HMGP, PDM, SFA-WUI, FLEP, RCA-EAP, CFRP

**#2 Priority Goal: To provide public information and education regarding the wildfire hazard and what people can do about it.**

- A. Objective: *To provide public information through print and broadcast media on the subject of defensible space.*

Possible projects:

1. Develop and disseminate printed information on the subject of defensible space, to include (but not limited to):
  - (a) reducing fuels;
  - (b) building with fire-resistant materials;
  - (c) designing roads and driveways;
  - (d) protecting utilities; and
  - (e) using fire-resistant landscaping.

2. Develop and disseminate radio and TV spots for the same.

Responsible agencies:

State government  
Local government  
HLS

Possible funding:

HMGP, PDM

- B. Objective: *To provide educational community meetings and seminars on the subject of defensible space.*

Possible projects:

1. Develop and deliver community meetings and seminars on the subject of defensible space.
2. Develop demonstration project to illustrate defensible space tactics.

Responsible agencies:

State government  
Local government  
HLS

Possible funding:

HMGP, PDM

Local government operating budgets

- C. Objective: *Provide information and technical assistance to local government planners and private developers on the subject of fire-resistant communities.*

Possible projects:

1. Develop and deliver printed materials to guide planners and developers in utilizing defensible space tactics when laying out subdivisions and other development projects.

Responsible agencies:

State government  
Local government  
HLS

Possible funding:

HMGP, PDM  
Local government operating budgets

- D. Objective: *Provide public information on the subject of what to do if a wildfire is nearby.*

Possible projects:

1. Develop and deliver public information on personal and family preparedness for evacuation and/or defense if a wildfire appears to be threatening.

Responsible agencies:

State government  
Local government  
HLS

Possible funding:

HMGP, PDM  
Local government operating budgets

**#3 Priority Goal: To encourage and assist local governments to require property owners and developers to utilize defensible space tactics.**

- A. Objective: *Develop local code enhancements that require utilization of defensible space tactics where appropriate.*

Possible projects:

1. Adopt the 2006 WUI Code
2. Develop and enact other appropriate code enhancements.

Responsible agencies:

State government  
Local government

Possible funding:

Local government operating budget.

**#4 Priority Goal: To complete the rural addressing program and digital maps that locate critical facilities, subdivisions, fire fighting resources, roads and bridges, and specific private addresses.**

- A. Objective: *Identify every residence or business with a street name and address.*  
Possible projects:  
1. Complete the rural addressing program and stay current with it.  
Responsible agencies:  
Local government.  
Possible funding:  
Local government operating budget.
- B. Objective: *Develop digital maps of the wildland-urban interface.*  
Possible projects:  
1. Digitally map all street addresses, critical facilities, fire fighting resources, etc., in the wildland-urban interface.  
2. Extend digital mapping to include all areas subject to the wildfire hazard.  
Responsible agencies:  
State government  
Local government  
Possible funding:  
Local government operating budget.

**#5 Priority Goal: To provide training, equipment, and resources for fire departments to fight wildfires.**

- A. Objective: *Enhance existing wildfire training programs and equipment procurement for fire departments.*  
Possible projects:  
1. Enhance existing programs.  
Responsible agencies:  
State government  
Local government  
Possible funding:  
HMGP, PDM, SFA-WUI, RFA, VFA  
Local government operating budgets
- B. Objective: *Enhance existing or develop new fire fighting resources for wildfire suppression.*  
Possible projects:  
1. Enhance existing or develop new water sources in wildfire-prone areas.  
2. Maintain water-filling areas for helicopters.  
3. Establish dry water hydrants in high hazard fire areas  
Responsible agencies:  
Federal government

State government  
Local governments  
Possible funding:  
HMGP, PDM, SFA-WUI, local government operating budgets

- C. Objective: *To preposition extra fire fighting resources prior to the beginning of the fire season.*  
Possible projects:  
1. Contract with air and ground fire fighting contractors to position their assets at key points within the state.  
Responsible agencies:  
State government  
Possible funding:  
State operating budget

## Technological and Manmade Mitigation Strategies ✓

Partners in the terrorism and response, worked together to develop strong, yet realistic, mitigation strategies for technological and man-made disasters. The effects of terrorism can vary significantly from loss of life and injuries to property damage and disruptions in services such as electricity, water supply, public transportation, and communications. In that respect, preparation for terrorist events is similar to any other disaster. Mitigation efforts for other hazards will also help to prevent damage from terrorist incidents as well. This "all-hazards" mitigation approach builds upon existing programs that mitigate other natural and technological hazards while focusing on security of the public. With this "all-hazards" approach in mind, the State and communities can and should:

### **#1 Priority Goal: Recognize facility vulnerabilities throughout the State**

- A. Objective: *Establish ways to identify and fund structural mitigation measures.*  
Possible projects:  
1. Provide SIAC information and data supporting all-hazard mitigation efforts in for their assessment software  
2. Encouraging tying into PDM funds to enhance structural mitigation measures on vulnerable State and local facilities.  
Responsible agencies:  
State government to identify structural mitigation measures  
Local and State government to apply for grant opportunities  
Possible funding:
- B. Objective: *Assess and enhance security measures at critical facilities*  
Possible Projects:  
1. All-hazard risk assessment information when updating security measures

2. Provide funding through Homeland Security grants to fund projects

Responsible agencies:

- State government to identify structural mitigation measures
- Local and State government to apply for grant opportunities

Possible funding:

**#2 Priority Goal: Reduce risk from bomb blast and nuclear, biological, and chemical attacks to critical state facilities and population.**

- A. Objective: *Review state and local technological manmade response and recovery plans*

Possible Projects:

1. Encourage local governments to review technological manmade hazards plans and include risk analysis and mitigation measures in their regional/local hazard mitigation plans.

Responsible agencies:

- State government to identify mitigation measures
- Local and State government to apply for grant opportunities

Possible funding:

- B. Objective: *Identify other plans and studies to assist with risk assessment*

Possible Projects:

1. Develop a secure technological and manmade library for plans
2. Work with private sector to gather risk assessment data.

Responsible agencies:

- State government to identify plans
- Local and State government to apply for grant opportunities

Possible funding:

**#3 Priority Goal: Enhance outreach and partnerships with state and local agencies**

- A. Objective: *Include non-traditional institutions, agencies, commissions, etc., that are impacted by technological and manmade hazard in state and local mitigation plan development.*

Possible Projects:

1. Include private sector representative on the State Hazard Mitigation Team
2. Include higher education on the State Hazard Mitigation Team

Responsible agencies:

State government to identify outreach and partnership opportunities  
Local and State government to apply for grant opportunities

Possible funding:



## All Hazard Mitigation Strategies ✓

All hazard mitigation strategies are those strategies, which do not directly correspond with one hazards or in there completion mitigate a number of hazards. The emphasis in the all hazard mitigation arena in the coming years will be to include man made hazards in the state mitigation plan, and to increase the accuracy of the vulnerability assessment. Completing these strategies will allow the mitigation plan to be a more useful plan to the end users.

### **#1 Priority Goal: Improve the State’s Disaster Response and Recovery Capability.**

- A. Objective: *Facilitate the enhancement of State and local Emergency Recovery Plans and provide related training and technical assistance.*

Possible projects:

1. Facilitate the review of existing Disaster Recovery Plans for potential enhancement with respect to All Natural and Man-made Hazard Mitigation initiatives
2. Provide planning and related technical resources to facilitate the enhancement of Disaster Recovery Plans to include Hazard Mitigation initiatives

Responsible agencies:

State government, Division of Homeland Security

Possible funding:

EMPG, HMGP, FMA, DRI, State

### **#2 Priority Goal: Continued involvement with mitigation planning in Utah.**

- A. Objective: *Continue to have a current approved state mitigation plan*

Possible projects:

1. Have an update of the state mitigation plan approved
2. Submit a PDM-C grant application to
  - i. Increase the accuracy of GIS data utilized in the current plan
  - ii. Utilize HAZUS with updated Flood and Earthquake runs
3. Collect and organize data of State owned or operated critical facilities
3. Review HLS records to support financial management of federal funding. HLS has successfully managed the federal funding for the PDM-C, Homeland Security, CESSP, EMPG, DR-1576, DR-1598 and EM-3223.

Responsible agencies:

State government, Division of Homeland Security, Division of Facilities Construction & Management

Possible funding:

EMPG, HMGP, FMA, PDM, State

- B. Objective: *To provide technical assistance to regional planning agencies and communities in a timely manner, with a reasonable turnaround time, as the multi-jurisdictional and local plans are being updated.*

Possible projects:

1. Continued involvement with the SHMT

2. Continued coordination with the SHMO, Earthquake Program Manager, and State Flood Plain Manager
3. Coordination with FEMA
4. Standing Natural Hazard Mitigation plan review committee.

Responsible agencies:

State government, Division of Homeland Security

Possible funding:

EMPG, HMGP, FMA, PDM, State

### **#3 Priority Goal: Increase awareness of hazard mitigation**

A. *Objective: Document mitigation projects through out the State*

Possible projects

1. Study and document loss avoidance for all completed mitigation projects
2. Develop and distribute a best practice in mitigation hand book to be used by locals and other state agencies
3. Study and document all hazard events

*Objective: Increase public awareness of hazard mitigation through outreach and education*

Possible projects

1. HLS will continue to pursue public education initiatives concerning mitigation, including the information booth at the Utah State Fair and information posted on the HLS website
2. Distribute Utah Hazards Handbook

Responsible agencies:

State government, Division of Homeland Security

Possible funding:

EMPG, HMGP, FMA, PDM, State

### **#4 Priority Goal: Improve overall integrated statewide mitigation efforts**

A. *Objective: Integrate the SHMP with other state and local plans*

Possible projects

1. Require all communities within Utah have an updated comprehensive plan with hazard mitigation a component of the plan
2. Create a planning clearing house that reviews all plans created by state agencies and links them together

Responsible agencies:

State government, Division of Homeland Security  
Governors Office of Budget and Planning  
Department of Natural Recourses  
State Legislators

Possible funding:

EMPG, HMGP, FMA, PDM, State

B. Objective: Protect citizens and property from poor land use development

Possible projects

1. Develop full disclosure laws
2. Develop model ordinances

Responsible agencies:

State government, Division of Homeland Security  
Governors Office of Budget and Planning  
Department of Natural Resources  
State Legislators

Possible funding:

EMPG, HMGP, FMA, PDM, State

